Catalogue

1、Overview

WB01 is a fully functional, highly integrated and low-power dedicated Wi-Fi + BLE module for the IoT. It supports IEEE802.11 b/g/n protocol, also embedded with IPv4, TCP, UDP, DNS, HTTP and other complete network protocols, makes the terminal more reliable, convenient and easy to use in the application of the IoT.

Wb01 core chip adopts holacon wb01 single chip scheme, and the chip is highly integrated with CPU、PMU、RAM、T/R SW、LNA、PA and other main parts, thus greatly reducing the power consumption of the whole machine. The chip is a 24 bit MCU with a maximum running speed of 160MHz and built-in 352kb ram, which can make the chip support multi cloud connection. The module provides a complete serial interface function to communicate with the device, and can connect the device through the serial port to cloud and mobile client.

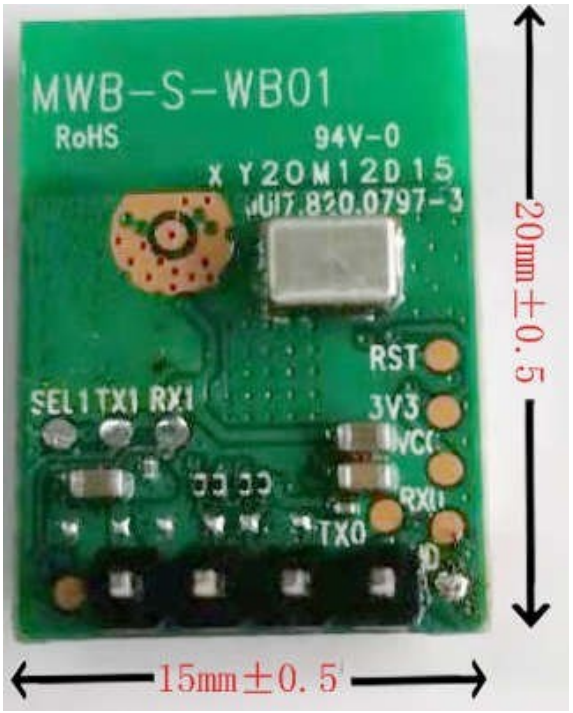
Features：

- Support IEEE 802.11b/g/n protocol
- support 20MHz and 40MHz in 2.4GHz band
- Bluetooth BLE 4.2
- Low power consumption monitoring mode
- Support encryption protocols: WAPI, WPA, WPA2
- Support IPv4, TCP, UDP, DNS, HTTP and other network protocols

2、Top view

Front

Back



3、RF characteristics

3.1、Tx & Rx characteristics

Support IEEE 802.11a/b/g/n standard; In terms of transmitting power, receiving sensitivity, EVM, distribution and other parameters, seek more stringent standards than IEEE specifications. For specifications, please refer to the attached table below.

Figure 1: Wi-Fi 2.4GHz Band RF Specifications

WiFi RX Characteristics	Condition	Min.	Typ.	Max.	Unit
Frequency range		2412		2484	MHz
Sensitivity	HT40, MCS7		-69		dBm
	HT20, MCS7		-71		dBm
	54 Mbps OFDM		-74		dBm
	6 Mbps OFDM		-92		dBm
	11 Mbps DSSS		-90		dBm
	2 Mbps DSSS		-92		dBm
Adjacent channel rejection ratio	HT40, MCS7		20		dB
	HT20, MCS7		25		dB
	54 Mbps OFDM		26		dB
	11 Mbps DSSS		40		dB
WiFi TX Characteristics	Condition	Min.	Typ.	Max.	Unit
Frequency range		2412		2484	MHz
Transmission power (EVM meets the standard requirements)	HT40, MCS7		13		dBm
	HT20, MCS7		14		dBm
	54 Mbps OFDM		15		dBm
	11 Mbps DSSS		17		dBm

Figure 3: BLE RF Specifications

BLE RX Characteristic	Condition	Min.	Typ.	Max.	Unit
Frequency range		2402	-	2480	MHz
Data rate			1		Mbps
Sensitivity			-85		dBm
Max RF input signal in		-10			dBm
Mutual loss				-23	dBm
Common channel rejection ratio C/I			10		dB
Adjacent channel rejection ratio	+1MHz		0		dB
	-1MHz		0		dB
	+2MHz		-20		dB
	-2MHz		-27		dB
	+3MHz		-25		dB
	-3MHz		-36		dB
Out of band blocking	30MHz~2000MHz	-10			dB
	2000MHz~2400MHz	-20			dB
	2500MHz~3000MHz	-10			dB
	3000MHz~12.5GHz	-10			dB
BLE TX Characteristic	**Condition**	**Min.**	**Typ.**	**Max.**	**Unit**
Frequency range		2402		2480	MHz
Data rate			1		Mbps
Tx power		-20	5	20	dBm
20dB band BW			1		MHz
Frequency offset		-150		150	KHz
Max Drift		-50		50	KHz
Drift rate			80	400	Hz/us
△f1avg		225	244	275	KHz
△f2max		185	195		KHz
△f1avg/△f2avg		0.8	0.85		
Adjacent channel transmission power	2MHz Offset		-45	-20	dBm
2)Frequency Drift	>=3MHz Offset		-47	-30	dBm

3.2、Module antenna characteristics

The antenna passive performance of Wi Fi + ble module shall meet the following requirements (since the passive performance can only be used as a reference, the antenna performance test is mainly based on the active throughput test):

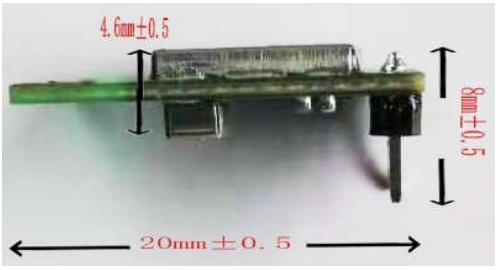
Figure 4 Module antenna characteristics

Parameters	2400MHz-2484MHz at 2.4G band
Return loss	<-10dB
Efficiency	>40%

4、Package

】4.1、PCB

PCB thickness：1.0mm
Module thickness(with shield)：8mm±0.5mm



proofing paint and glue spraying 75～120 um

4.2、Peripherals

Figure 2.1 Peripherals

No.	Mark	**Wi-Fi** peripherals
1	V	VCC power
2	R	RXD recieving
3	T	TXD transmitting
4	GND	GND ground

Wiring instructions:

RXD and TXD pins of Wi Fi Bluetooth module are respectively connected to TXD and RXD pins of communication terminal and VCC of module

Grounded at 5V / 3.3V level, GND grounded. After the module is powered on, it is received through RXD terminal and sent through TXD terminal.

4.3、Labels

Printing requirements:

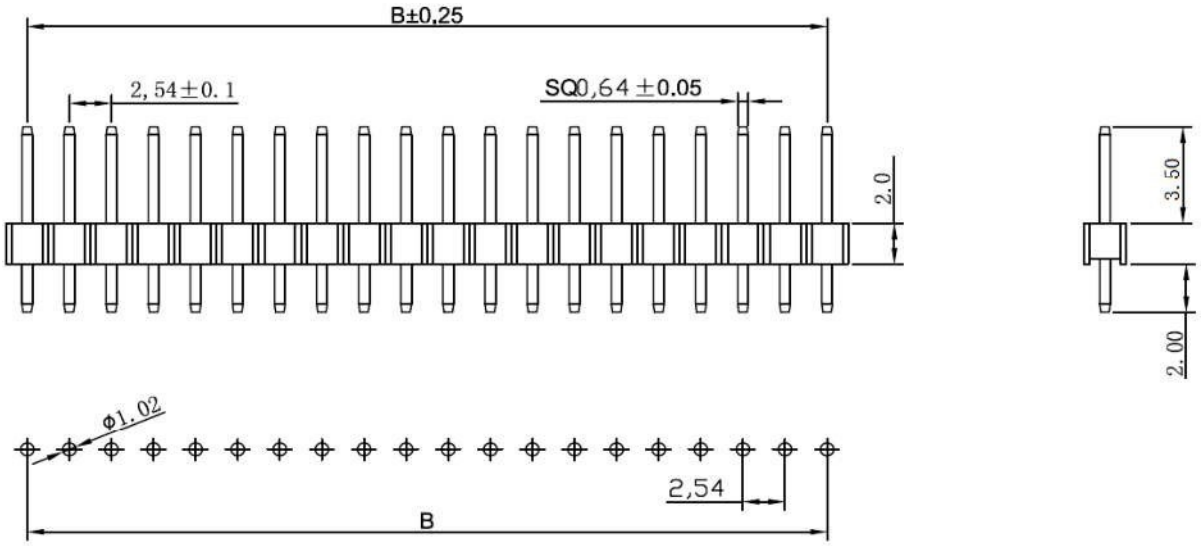
Lable dimension: 13.5*9.5mm, lable should be white Song typeface; The dimension of QR code is 4.8 * 4.8mm. QR code content:

QR code content:		
Field	**Length**	**remarks**
MAC address	12	
production information S/N	 26	If "X" is not enough, use "X" to make up Processing plant code (2 digits) + operation number (8 digits) + production date (6 digits) + small version of software This number (6) "02BPF4FM041706080000010000"
Software version number	12	The firmware issued by the division shall prevail
Power	4	5.0V
Current	9	DC 5V/0.5A

Note:
Production information (26 digits):02 XXXXXXXX 170608 000003 0000

The first and second place: represents the production plant
The 3rd to 10th digits: the operation number of the production plant
Figures 11-16: production date, for example, June 8, 2017 is marked as 170608, and figures 17-22: undetermined
Numbers 23-26: enterprise code. Midea's internal business division is "0000". Non Midea's enterprise code is based on the software code.
Software version (12 digits): xxxxxxxxxxxxx
Power supply (4 bits): module working voltage and current (5 bits): 500mA
Other marks: according to the actual needs, write as many as you need; Cmiit ID: write according to the actual situation;
Code: 17310900003061;
Digital segments are separated by "," and ";

4.4、Pin drawing



Technical requirements:

Rated current: 3A

Withstand voltage value: AC 500V

Operating temperature: - 40 ℃ ~ + 105 ℃

Insulating material: Black PA6T

Material: Brass

Plating: g / F plated over nickel

5、Power consumption

State	Average current in 2min (mA)	Peak current (mA)	Max current in 2min (mA)	Min current in 2min (mA)
Idle	20	50	50	25
STA	15	80	80	13
AP	30	150	150	50

Note: the module power consumption is the measured value of samples taken from the laboratory. In practical application, it will vary with the use environment and scene. This data is for reference only;

6、Electrical characteristics

Power parameters: (ripple controlled within 100mV)

Symbol	parameter	Min	Typ	Max	Unit

VDD	Power	3.1	5	5.25	V

DC Electrical Characteristics for Digital I/Os

Symbol	parameter	Min	Typ	Max	Unit
VIH	High Level Input Voltage	4.5	5	5.5	V
VIL	Low Level Input Voltage	-0.3	-	0.3	V
VOH	High Level Output Voltage	4.75	5.0	5.25	V
VOL	Low Level Output Voltage	0	-	0.4	V

7、Standards and certification

Wi Fi + ble module must comply with ROHS environmental assessment certification.

8、Precautions for use

Precautions for use

The Wi Fi + ble module exposed in the air (the core board inside the module or the whole composed of the core board and the substrate) shall at least meet the service environmental conditions of ordinary consumer electronic products, including but not limited to:

Operating temperature: - 10 ~ 75 ℃

Storage temperature: - 20 ~ 85 ℃

Working humidity: 0 ~ 95% RH

Storage humidity: 0 ~ 98% RH

Withstand the thermal shock of - 20 / + 85 ℃ every 2h, and there is no abnormal function or performance degradation and no significant tin crack under the impact of at least 20 cycles.

When working for a long time, the temperature rise of circuit elements shall meet the

requirements of their own specifications.

Simulating the transportation process and home application scenarios, the module shall withstand a certain degree of mechanical impact and drop.

Through certain protective measures, Wi Fi + ble module can have higher environmental adaptability. Design of Wi Fi + ble module

The margin in performance, size and process required for the implementation of protective measures shall be reserved.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept

any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device.

FCC Radiation Exposure Statement

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: 2A5BD-WB01 Or Contains FCC ID: 2A5BD-WB01”

When the module is installed inside another device, the user manual of the host must contain below warning statements;

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with Single modular approval should perform the test of radiated emissionand spurious emission according to FCC part 15C : 15.247 and 15.209 requirement,Only if the test result comply with FCC part 15C : 15.247 and 15.209 requirement, then the host can be sold legally.

Single Module

IC Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Radiation Exposure Statement

This modular complies with IC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the ISED identification number is not visible when the module is installed inside another device,
then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following:
"Contains Transmitter Module IC: 28527-WB01 Or Contains IC: 28527-WB01"

When the module is installed inside another device, the user manual of the host must contain below warning statements;
1. This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:
(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with Single modular approval should perform the test of radiated emission and spurious emission according to RSS-247 requirement, Only if the test result comply with RSS-247 requirement， then the host can be sold legally.

Cet appareil est conforme aux CNR exemptes de licence d'Industrie Canada . Son fonctionnement est soumis aux deux conditions suivantes :
(1) Ce dispositif ne peut causer d'interférences ; et
(2) Ce dispositif doit accepter toute interférence , y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.

Déclaration d'exposition aux radiations
Ce module est conforme aux limites d'exposition aux rayonnements RF IC définies pour un environnement non contrôlé.
environnement. Cet émetteur ne doit pas être co-localisé ou fonctionner en conjonction avec tout autre antenne ou émetteur. Ce module doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et le corps de l'utilisateur.